



LEESBURG
The Lakefront City

City of Leesburg

GROWTH MANAGEMENT PLAN POTABLE WATER ELEMENT

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CHAPTER V POTABLE WATER ELEMENT

A. INTRODUCTION

The City of Leesburg currently owns, operates and maintains a central potable water treatment and distribution system. The City's potable water system provides water for both residential and non-residential purposes, including fire-fighting demands.

The City has historically been able to provide adequate potable water service to meet not only the demand within the City's boundaries, but also the demand from surrounding unincorporated areas of Lake County extending to Bassville Park, Okahumpka, Highland Lakes, Spanish Village, Silver Lake, and the Royal Highlands. A single private utility provider, Florida Water Service, also provides service within the City's service area. These private systems, as detailed further within this report, generally service small isolated developments.

On July 23, 2001, a Water and Wastewater Rate Study for the City of Leesburg was initiated. The primary objective of the study was to identify the appropriate impact fees **and usage rates** for potable water and wastewater users **to ensure that the revenues generated sufficiently fund operating and planned capital improvement program costs.** **Additionally, water utility rates were designed using a four-tiered, escalating rate structure to promote water conservation.** **The new utility rates and impact fees were implemented by the city as of January 1, 2003.**

The inventory and analysis is based on the 10-Year Water Facilities Work Plan completed in May 2004.

B. POTABLE WATER INVENTORY

1. Public Potable Water Facilities Inventory

The City's central potable water system is comprised of four individual systems; the Leesburg East **Water** Treatment System; the City of Leesburg **Main Water** Treatment System; the Highlands Lake **Water** Treatment System; and the Royals Highlands **Water** Treatment System. All of these systems are interconnected with the exception of the Royal Highlands **Water Treatment S**system which currently stands alone. Combined, these four systems are comprised of five (5) water treatment plants, fifteen (15) public water wells, two (2) hydrostatic tanks, four (4) above ground storage tanks, and three (3) ground storage tanks. **Two (2) new 1,000-foot Lower Floridan wells were constructed in early 2004 to enhance fire-flow protection capabilities: one (1) well at the Highland Lakes WTP System and one (1) well at the Royal Highlands WTP System. The associated pumping facilities associated with these wells are scheduled to be completed by June 2004.** The distribution system consists of approximately 325 miles of water mains ranging from 2" to 24" in size. This distribution system provides water to a service area, which is divided into four sub-systems as stated above. The extent of the current areas being serviced is depicted in Map V-1.

a. Operational Responsibility

The City of Leesburg Water Department is responsible for the operations and maintenance of the central public water system within the City's service area.

b. Service Area and Predominant Users

The current geographic service area of the central water system includes all property within the City limits, as well as surrounding unincorporated areas of Lake County including Bassville Park, Okahumpka, Highland Lakes, Spanish Village, Silver Lake, and Royal Highlands. The City does not have an interlocal agreement with the County for providing service. **However, the City has been working closely with the County to establish and finalize a Joint Partnership Agreement (JPA) to define utility service boundaries.** See Map V-1 for the limits of the City's service area.

As of December 31, 2003, Presently, the City ~~served~~ **is servicing** approximately ~~9,722~~ **10,764** residential meters and ~~1,896~~ **2,355** non-residential meters, for a total of ~~11,618~~ **13,119** meters. Table V-2 identifies the **water usage by customer type (residential, commercial/industrial, irrigation, and utility water uses) for years 1999 through 2003** ~~number of meters within and out of the City limits~~. The predominant land use serviced by the central water system is low and medium density residential.

c. Public Potable Water Facility Design and Capacity

All of the City's central water system facilities provide primary treatment and utilize the same basic process for water treatment. Groundwater is pumped from the Floridan Aquifer into a water storage tank. The water is chlorinated and pumped into the distribution system using high service pumping units. ~~Additionally, Fluoride is added at the City of Leesburg water treatment plant.~~ Each of these treatment facilities consists of several distinct parts, which together comprise a complete plant system, including: wells, treatment, storage, and high service pumping. The following are descriptions of each facility and Table V-1 summarizes the plant capacities and current demand.

(1) *Water Treatment Plants*

The City of Leesburg has five water treatment plants. However, two of these plants, the Lake Square Mall plant and the Leesburg Airport plant operate as one system. All of the City's water treatment plants are interconnected with the exception of the Royal Highlands plant which stands alone. The location of the five water treatment plants is illustrated on Map V-2 ~~and Map V-3~~

while an inventory of the facilities is provided in Table V-1. The following is a brief description of each water treatment plant.

(a) City of Leesburg Water Treatment Plant

The City of Leesburg Water Treatment Plant is located in the historic downtown area of the City at 223 South 5th Street. This facility services the downtown portion of the City and the immediately surrounding areas and was constructed in 1982. The maximum FDEP permitted and design capacity of this treatment plant is currently 19.699 million gallons per day (MGD). The current average demand on the plant is 3.41 ~~3.63~~ million gallons per day. This plant has several support facilities (see Tables V-1, V-3, and V-4), including: nine (9) wells of various size, five (5) high service pumps (rated @ 2,100, 4,200 and three (3) @ 6,300 GPM), two (2) above ground storage tanks (0.5 and 0.2 million gallon capacity), and two (2) ground storage tanks (1.5 million gallon capacity).

(b) Leesburg East Treatment System

The Leesburg East Water Treatment System consists of two separate plants located at the Lake Square Mall, ~~10401 US Highway 401~~, and at the Leesburg Airport, ~~32733 Echo Drive~~. Together, these facilities service the eastern portion of the City and were constructed in 1980 and 1984 respectively. The maximum FDEP permitted and design capacity for the Leesburg East System (both treatment plants combined) is 2.237 ~~2.595~~ million gallons per day. The current demand on the plants is 1.33 ~~1.06~~ million gallons per day. The Lake Square Mall plant has one (1) fourteen-inch well rated at 2,160 gpm, and one 0.15 million gallon above ground storage tank. The Airport plant has one (1) twelve-inch well rated at 1,000 gpm, and two (2) 10,000-gallon hydrostatic storage tanks. However, in 2003 the well pumping capacity at the Airport Water Treatment facility was ~~will be~~ increased from 1,000 gpm to 1,500 gpm to meet fire flow demands LOS standards.

(c) Highland Lakes Treatment System

The Highland Lakes plant is located the Highlands Lakes development at ~~26800 Cash Court~~. This plant was constructed in 1990. The maximum permitted and design capacity of this treatment plant is 1.312 million gallons per day. The current demand on the plant is 0.74 ~~0.55~~ million gallons per day. The plant has two (2)

twelve-inch wells rated @ 650 GPM and one 0.20 million gallon above ground storage tank.

(d) Royal Highland Treatment System

The Royal Highlands Plant is located at the Royal Highlands development 21747 Royal St. George Lane and was constructed in 1996. The maximum FDEP permitted and design capacity of this treatment plant is 1.602 million gallons per day. The current demand on the plant is 0.74 0.58 million gallons per day. The plant has two (2) twelve-inch wells rated @ 700 GPM, two (2) high service pumps rated @ 550 GPM, one (1) fire pump rated @ 1,050 GPM, and one 0.50 million gallon ground storage tank.

The maximum pumping capacity of these facilities is limited by the City of Leesburg's Consumptive Use Permit (permit no. 94) as issued by the St. Johns River Water Management District (SJRWMD). This permit, which expires in 2004, allows for a combined annual withdrawal from the Floridan Aquifer of 2722.9 million gallons in 2001, 2897.9 million gallons in 2002, 3061.4 million gallons in 2003, and 3333.4 million gallons in 2004. The City is presently in the process of renewing its Consumptive Use Permit.

(2) Public Potable Water Storage Facilities

Combining all systems, the City has four (4) above ground storage tanks, three (3) ground storage tanks, and two (2) hydrostatic tanks connected to the central system as described above. One of the ground storage tanks is located at the Royal Highlands plant which is not connected to the other three systems. The capacity of each storage tank is identified in Table V-4.

(3) Public Distribution System

Four of the five water treatment plants are connected to the central main distribution system with Royal Highlands treatment plant standing alone as previously stated. The central distribution system consists of water mains ranging in size from 2 inches to 24 inches. The vast majority of the distribution system consists primarily of six (6), eight (8), ten (10) and twelve (12) inch mains. The age of the majority of the system is approximately 20-years old. The predominant material used in approximately 50 percent of the distribution system is PVC pipe and corresponds to the newer sections. The majority of the older sections of the distribution system were constructed using cast iron piping. A majority of the 2" service lines are constructed of galvanized iron pipe. Approximately seventy-five percent of the City's water

system is looped, which enhances the system's efficiency, water quality and improves fire flow capabilities.

(4) *Public High Service Pumps*

For the purposes of planning, the high service pumps shall be the component used to determine system capacity. There are a total of eight high service pumps connected to the central system, five pumps at the City of Leesburg Plant, **two pumps at the Highland Lakes Plant** and three pumps at the Royal Highlands Plant. In addition, four booster pumps are connected to the distribution system to supply additional water pressure to service developments in high elevation areas. The pump, its rated capacity, and the corresponding plant are identified in the section detailing the Water Treatment Plants. The wells, which serve the Central system, are adequate to supply the required water to meet the high service pumps distribution capacity. **Alternately, with the addition of one new well (and associated pumping facilities) at each the Highland Lakes and Royal Highlands Water Treatment facilities, the South system will adequately supply required water flow and pressure to meet high service pumping distribution capacity.**

(5) *Public Potable Water Wells*

As previously mentioned, the City's central potable water distribution systems are connected to fifteen (15) potable water wells, which are rotated in service on a periodic basis where applicable. These wells can be located on or off the site of the potable water treatment plant they serve. **With the completion of one (1) additional well each at the Royal Highlands and Highland Lakes Water Treatment facilities by June of 2004, the total number of potable water supply wells will be seventeen (17).** The City currently has a consumptive use permit with the Water Management District that allows the City to withdraw a maximum volume of water as previously detailed. The current demand for each well is identified in Table V-3.

In order to ensure that wellheads are protected from contamination, the City restricts the type of development allowed in the vicinity of a wellhead through implementation of the Future Land Use Map. The Future Land Use Element of the Leesburg Growth Management Plan identifies the future land uses for the City of Leesburg. Additionally, the City of Leesburg's Code of Ordinances, Chapter 27, identifies prohibited activities and land uses within the areas of wellfields and/or high aquifer recharge. Map V-2 identifies the location of the City's **water treatment facilities and** wellheads. The City adheres to the standards adopted for wellhead protection by the St. Johns River Water Management District and the FDEP.

The Floridan aquifer in the Leesburg area receives low to high recharge from the surficial aquifer, with the majority (over 90%) of the City falling in low and moderate recharge areas (0 to 4 inches per year) or discharge areas. This is due to water table elevation differences between the surficial aquifer and the Floridan Aquifer and the vertical hydraulic conductivity of the soils as well as the depth to the upper surface of the Floridan Aquifer. The areas within Leesburg that have high potential for aquifer recharge are the areas where the depth to the upper surface of the Floridan Aquifer is minimal and the thickness of the upper confining unit is reduced.

The transmissivity in the area around Leesburg is sufficiently high such that most large diameter wells, twelve (12) to twenty-four (24) inches, can be expected to produce over 1,500 gallons per minute (GPM) with little drawdown in the well and little impact to adjacent users. Drawdowns in the surficial aquifer are estimated to be very low, due to the Hawthorn Formation. In order to lessen the interference between wells, all wells are located in accordance with FDEP Rule 62-555.312 (five hundred (500) foot minimum spacing for shallow wells). At that distance the drawdown in one well due to another will be minimal. In addition, the City has requirements in place to maintain minimum setbacks from City wellfields for uses that could potentially introduce hazardous materials or chemicals into the groundwater.

(6) *Public Level of Service*

The central system currently treats an average of ~~5.50~~ **5.82** million gallons per day of potable water. The existing level of service for potable water demand is calculated by dividing the volume of water treated and pumped by the City's population. The current level of service provided in 2003 was is estimated to be ~~112~~ **150** gallons per capita per day. This amount is for residential ~~and non-residential combined~~. The average per capita water water usage over the years 1999 through 2003 is 121 gallons per capita per day.

2. Private Potable Water Facilities Inventory

There are a few areas within the City of Leesburg's service area which are serviced by Florida Water Service, a private utility company. Map V-1 details the limits of the areas serviced by Florida Water Service. None of these private systems are connected with the City's central water distribution system. However, the City is exploring the possibility of acquiring the Florida Water Service systems and incorporating them into the City's central system.

Within the City limits, the installation of private wells providing potable water to individual residential or non-residential developments are not permitted. Individual water wells do exist

within unincorporated portion of the City's service area. The actual number of private individual wells is not known.

C. POTABLE WATER FACILITIES ANALYSIS

1. Potable Water Capacity Surpluses and Deficiencies

a. Existing Demand Surpluses and Deficiencies

The evaluation of necessary systems to meet domestic and commercial consumptive demand is based upon the entire system's ability to meet peak hour and fire flow demands. Presently, the ability of the City's system to meet the consumptive demand is controlled by the maximum permitted pumping capacity as allowed by the City's Consumptive Use Permit (CUP) from the SJRWMD. The City's CUP has a maximum annual permitted withdrawal volume of 3,333.4 million gallons or 9.133 MGD allocated in 2004, the last year of the CUP permit prior to it expiring.

The City of Leesburg's combined water treatment facilities are central system is currently providing 6.22 5.83 MGD, average daily flow. The combined system has a maximum design capacity of 24.91 MGD 25.208 MGD (with the largest well in the city system out of service). When the two (2) new wells at the Royal Highlands and Highland Lakes WTP Systems are on-line, the city's actual maximum pumping capacity will be increased to 29.23 MGD (with the largest well in the city system out of service). Therefore, by June of 2004 there will be ~~is~~ an estimated 23.01 19.789 million gallons per day of surplus capacity, in city the water supply well pumping facilities aquifer. As such, the central system has adequate capacity in water supply well pumping facilities to serve current and future planned continue serving all of the existing residential and non-residential water demand needs calculated for this 10-year planning period units that are currently connected. However, the SJRWMD limits the amount of water the City can deliver to its customers in the City's Consumptive Use Permit (CUP). The City's present allocation for water consumption is 2897.9 MG (2002), 3061.4 MG (2003), and 3333.4 MG in 2004. This equates to an average water allocation of 7.93 MGD (in 2002), 8.39 MGD (in 2003), and 9.13 MGD (in 2004). Therefore, although the City has pumping capacity in the wells and water plants, these plants are greatly limited by the CUP in being allowed to deliver water to customers. Additionally, the water plants are limited by the City's water distribution system. The size and location of the City's distribution system cannot adequately serve growth projected in the south and southwest of the City's service area. Additional water distribution facilities will be needed to serve future development south of C.R. 48 on U.S. Highway 27 (planned Arlington Ridge development) and in the vicinity of the future turnpike interchange on C.R. 470 (future Pruitt property development), as described in the 10-Year-Water Supply Facilities Work Plan (Attachment A) associated with this Potable Water Element. Also, due to the location of

future water demands, a new southwest regional water treatment facility may provide water more cost effectively to customers in this (southwest) area than current facilities can. Therefore, an additional water treatment facility is planned for in this 10-year planning period (in 2010) to serve water demand needs anticipated in the area southwest of the current city water service area, as described in the 10-Year-Water Supply Facilities Work Plan (Attachment A). And lastly, the City is limited in the amount of water it can pump from its water plants due to the proximity of City supply wells to local springs (Blue Spring, Holiday Spring and Bugg Spring). The City is limited to that pumping capacity which does not depress/alter spring drawdown/flow by no more than 10%. Water treatment system operating rates should support safe-yield groundwater withdrawal projections modeled for the city to minimize impact to spring and surface water flows. Such practices, combined with actual demands lower than well capacities allow Leesburg to operate wellfields safely at the following 15.5 MGD for average daily flows, considering 2003 safe yield modeling data provided by Andreyev Engineering, Inc. for the City of Leesburg wellfield. An overview of safe yield modeling results is provided in Attachment A. It is recommended that as city wells/WTP facilities approach the calculated safe yield withdrawal rate, that the city recalculate the safe yield withdrawals incorporating the aquifer recharge component associated with stormwater recharge and the recharge associated with city reclaimed water irrigation (in the safe yield model). Therefore, given all of the above-mentioned limiting factors, improvements to the City's water treatment and distribution systems will be required in order to provide water to the projected growth areas within our service area, as described in the 10-Year-Water Supply Facilities Work Plan (Attachment A). The City is, however, considering various technologies, including the use of reclaimed water to serve irrigation water demand needs to enhance water resources and minimize the impacts to spring flows/levels. Additionally, in an effort to support the construction of new wells and water plant facilities to the ~~south and southwest~~, the City will be offering reclaimed water in this service area to offset needed potable groundwater supply. Since the city will be attempting to acquire a 20-year CUP from the water management district, the city will be seeking an additional reallocating existing permitted water consumption so that additionally pumping capacity allotment of 3.04 MGD (or 7.36 MGD if reuse is unavailable/out of service) in year 2025 will not be needed/requested. Additionally, the City has capacity to service all of the existing developments currently serviced by Florida Water Service systems.

b. Future Demand Capacity

Future water demand was forecast based on City population projections as detailed in the City's June 2004 CUP application submittal and the 10-Year Water Supply Facilities Work Plan (provided in Attachment A) Water Demand Study

~~2020 for each sub-district.~~ The level of service standard used in the calculation is the average residential water usage of 121 450 gallons per capita per day calculated over the years 1999 through 2003.

The potable water demand, as indicated in the 10-Year Water Supply Facilities Work Plan ~~Water Demand Study 2020~~, was projected for the years 2015 2010 and 2025 2020. Demand was calculated for the entire regional service area and broken down for each of the sub-districts. The actual daily A demand of 242 300 gallons per day was calculated for assigned to each retirement equivalent residential connection (ERC) (using 2 persons per retirement ERC) and the actual daily demand of 375.1 gallons per day was calculated for each family ERC (using 3.1 persons per family ERC). The total water demands for each retirement and family development/service area was then calculated and summed to determine the average daily demands (ADD). Table V-5 summarizes the projected water demands. By 2015 2010, the total regional demand is projected to be 13.27 9.55 MGD, increasing to 16.49 13.97 MGD (excluding reuse), or 12.17 MGD (including reuse) by the year 2025 2020. As previously stated, the cumulative maximum design capacity of the City of Leesburg's potable water facilities is 24.91 MGD 25.208 MGD (with the largest well out of service). When the new wells at the Royal Highlands and Highland Lakes WTP Systems are on-line, the city's actual pumping maximum capacity will be increased to 29.19 MGD (with the largest well out of service). However, the SJRWMD limits the amount of water the City can deliver to its customers in the City's Consumptive Use Permit (CUP). The City's present allocation for water consumption is 2897.9 MG (2002), 3061.4 MG (2003), and 3333.4 MG in 2004. This equates to an average water allocation of 7.93 MGD (in 2002), 8.39 MGD (in 2003), and 9.13 MGD (in 2004). Therefore, although the City has pumping capacity in the wells and water plants, these plants are greatly limited by the CUP in being allowed to deliver water to customers. Additionally, the water plants are limited by the City's water distribution system. The size and location of the City's distribution system cannot adequately serve growth projected in the south and southwest of the City's service area. And lastly, the City is limited in the amount of water it can pump from its water plants due to the proximity of City supply wells to local springs (Blue Spring, Holiday Spring and Bugg Spring). The City is limited to that pumping capacity which does not depress/alter spring drawdown/flow by no more than 10%. Water treatment system operating rates should support the safe-yield groundwater withdrawal projection of 15.5 MGD modeled for city wellfields to minimize impact to spring and surface water flows. Such practices, combined with the implementation of reclaimed water irrigation and discharge into rapid infiltration basins should further increase the amount of groundwater in the city service area that can be safely withdrawn. Therefore, given all of the above-mentioned limiting factors, improvements to the City's water treatment and distribution systems will be required in order to provide water to the projected

growth areas within our service area, as recommended in further detail in the attached 10-Year Water Supply Facilities Work Plan (see Attachment A). The City is, however, considering various technologies to enhance water resources and minimize the impacts to spring flows/levels. Additionally, in an effort to support the construction of new wells and water plant facilities to the ~~south and~~ southwest, the City will be offering reclaimed water in this service area to offset needed potable groundwater supply. Since the city will be attempting to acquire a 20-year CUP from the water management district, the city will be seeking an additional reallocating existing permitted water consumption so that additionally pumping capacity allotment of 3.04 MGD (or 7.36 MGD if reuse is unavailable/out of service) in year 2025 will not be needed/requested. Also, due to the location of projected future water demands (those southwest of the current central water service area), additional water supply and treatment facilities will be needed to cost-effectively serve water demands in this area. Therefore, improvements to the City's central potable water treatment system will ~~not~~ be required in order to provide the capacity required to service the projected growth, as recommended in further detail in the attached 10-Year Water Supply Facilities Work Plan (see Attachment A). Improvements to the distribution system ~~will also may~~ be required ~~due to depending on~~ the location of new development. Additionally, the City will be required to increase the maximum permitted withdrawal volume when it renews the Consumptive Use permit in 2004 in order to meet this projected demand.

The City does not reserve capacity for future development to assist in planning for future demand. Potential future development is accounted for in the methodology used in the estimation of water demand in CUP application prepared on behalf of the city and in the 10 year Water Supply Facilities Work Plan 2020 Water Demand Study. Existing and future deficiencies as identified in the 10-Year Water Supply Facilities Work Plan (see Attachment A) and study are addressed ~~in through~~ the Capital Improvements Element. A detailed list of capital projects required to meet future service demand, and eliminate expected deficiencies, through fiscal year 2012-2013 2005-2006 is presented in the Capital Improvements Element and in the 10-Year Water Supply Facilities Work Plan (provided as Attachment A).

c. Fire Protection

In addition to domestic and commercial demand, the City has identified the need to rate the water system in terms of its ability to provide fire protection. To rate the water system in terms of fire protection, the City strives to meet the requirements for fire protection standards set by the NFPA (National Fire Protection Association) and the ISO (Insurance Services Office).

The City has established fire protection level of service standards based upon land use designations. Level of service for single family residential land uses has been set at 500 GPM with a required 20-psi residual pressure. For multi-family and commercial land uses, a level of service of 1000 GPM with a required 20-psi residual pressure has been adopted.

In order to identify areas of possible deficiency in meeting the fire protection LOS, the fire department conducts hydrant flow tests in selected areas of the City as needed. The data from these tests indicates that there are deficiencies in the northern portion of Leesburg and at Sunnyside. The Leesburg Environmental Services Department ~~completed is currently working on~~ projects in FY 2002-03 to resolve these situations. Additionally, in order to meet the stated LOS standards for fire protection under the maximum plant pumping capacity with the largest well out-of-service standard, water supply and pumping deficiencies were identified by the city for both the Highland Lakes and Royal Highlands Water Treatment Systems. In response to this need, in FY02/03 new well and pumping facilities were designed for each of these plants, one (1) 1,000-foot Lower Floridan aquifer supply well was constructed for each facility in early 2004, and associated pumping facilities are anticipated to be completed (and the issue resolved) by June 2004.

2. Performance and Condition of Existing Facilities

The water quality from the Floridan aquifer is sufficiently good and requires only chlorination treatment to be suitable for potable water consumption. ~~Additionally, Fluoride is added at the City of Leesburg plant at the City's discretion.~~

Each of the City's water treatment plants has consistently operated in compliance with all criteria established by the FDEP and Department of Health and Rehabilitative Services with respect to public water supplies.

All of the City's water treatment plants were constructed between 1980 and the present. Each plant continues to be operated and maintained in good operating condition. Repairs and/or upgrades to each plant are performed as required on an individual basis. As stated above, uUpgrades are underway for the Highland Lakes and Royal Highland water plants to include the construction of one (1) additional well to enhance fire flow protection. Each plant should have a minimum remaining useful life through the year 2025 ~~2020~~.

a. Distribution System Performance

Overall, the performance of the distribution system is rated as good to excellent for general condition and, provided regular maintenance is performed, should continue to operate in this condition. All galvanized pipes are in generally poor condition and are being replaced by the City with more reliable PVC or HDPE material on a yearly basis, budget permitting.

b. Public Well Performance

There is a slight reduction in pumping volumes when the water level drops in the wells. Wells are rotated and consolidated daily by operating personnel as applicable.

Additionally, to meet additional growth and project water supply needs along the Hwy. 27 corridor, a 12-inch water distribution main is planned for Hwy 27, from Leesburg High School to the Highland Lakes north property boundary. Additionally, in an effort to cost-effectively meet future water demand needs for the Pruitt property development and C.R. 470/Turnpike interchange area southwest of the city's current central water service area, new wellfields and a new water treatment plant is planned for FY 09/10 through FY11/12 major upgrades (wellfield and storage tanks) are planned for the Royal Highlands Water Plant area. A complete description of required and planned water supply, treatment and distribution facilities is provided in the 10-Year Water Facilities Work Plan (see Attachment A).

3. Potable Water Facility Replacement, Expansion and New Facility Siting

Recommended capital projects to overcome existing deficiencies in water transmission, and to provide additional system capacity needed for projected growth, if required, are included in the Capital Improvements Schedule and in the 10-Year Water Facilities Work Plan (see Attachment A). The City's U.S. Hwy 27 12-inch water main, Highland Lakes and Royal Highlands water treatment plant projects are programmed for improvement during the short term planning horizon. In 2009, the The City plans to perform is in the process of designing and permitting services to construct a new major upgrades to the Royal Highlands water plant so that it can serve as a southwest regional water treatment plant and wellfield at the Pruitt property. This plant in conjunction with the Royal Highlands plant will provide service to the south and southwest portions of the City's future-projected service area. Major upgrades to the royal Highlands regional plant are being constructed because no other plant site (including the proposed Pruitt location) has the capacity to meet the projected demands within the south and southwest portions of the service area (considering Spring location and pumping constraints). It is anticipated that the fully upgraded Royal Highlands Water Treatment Plant will have a design capacity of approximately 4.0 MGD. Additionally, there are several line extensions programmed during the short term planning horizon. These line extensions include the interconnecting of the Royal Highlands facilities with the other WTP's. Details of proposed improvements are listed in the City's Capital Improvements Program and in the 10-Year Water Facilities Work Plan (see Attachment A).

a. Future Wells

Due to the proximity of the City's high growth service area to the Bugg, Holiday and Blue Springs, shallow wells will not produce the desired flow given the drawdown constraints of the Springs, and are therefore considered to be not feasible for use in

future projects in this area of future demand. Future wells should be between twelve (12) and twenty-four (24) inches in diameter and be cased approximately 600 feet deep and be open from 600 to around 1,000 feet to produce at least 1,500 GPM. The wells should be spaced from other 'deep' wells or 50 feet apart from neighboring 'shallow' zone wells to minimize draw down impacts on the other wells. The City **constructed two (2) new supply wells (one well at Highland Lakes WTP and well one at Royal Highlands WTP) and is planning to construct anticipates construction of three (3)** new wells (associated with the construction of the new Southwest Regional Water Treatment facility), **to these standards**. These additional wells, along with the existing wells, should provide the City with adequate capacity to meet projected demands within the City's service area for the next **twenty thirty** years. Additionally, deeper wells in this area are not expected to require additional treatment prior to public consumption, based on the quality of water generated by the City's deep aquifer well located at Highland Lakes.

Table V- 1: City of Leesburg Water Treatment Plants – ~~2003~~ 2004

Water Treatment Plant	Location	Current Demand	Maximum Design Capacity
City of Leesburg	223 South 5th Street	3.41 3.63 MGD	19.699MGD
* Airport Plant	32733 Echo Drive	1.33 1.06 MGD	2.237 2.595 MGD
* Lake Square Mall	10404 U.S. Hwy. 401		
Highland Lakes	26800 Cash Court	0.74 -0.55 MGD	1.312 MGD
Royal Highlands	21747 Royal St. George Ln.	0.74 -0.55 MGD	1.602 MGD
Total		6.22 5.82 MGD	24.850 25.208 MGD

* Leesburg East WTP System consists of both the Airport and Lake Square Mall Water Treatment Plants.

Note, the above design capacity does not include additional capacities associated with new wells at Highland Lakes WTP or the Royal Highlands WTP.

Source: City of Leesburg Environmental Services Department –~~2002~~ 2003 12-month average EN50 data.

Table V- 2: City of Leesburg ~~Existing Potable Water Usage by Customers Type~~– 2004 2003

Type of User	Inside-City Limits <u>1999 Average Day Water Usage (MGD)</u>	Outside-City Limits <u>2000 Average Day Water Usage (MGD)</u>	Combined <u>2001 Average Day Water Usage (MGD)</u>	Percentage Inside-City <u>2002 Average Day Water Usage (MGD)</u>	Percentage Outside-City <u>2003 Average Day Water Usage (MGD)</u>
Residential	<u>3.50*</u> 6,654	<u>4.0</u> 4,110	<u>3.37</u> 10,764	<u>3.29</u> 62%	<u>3.07</u> 38%
Commercial/ <u>I</u> ndustrial	<u>2.62*</u> 1,414	<u>4.94</u> 254	<u>3.21</u> 1,668	<u>2.48</u> 85%	<u>2.36</u> 15%
Municipal	<u>0.02*</u> 107	<u>0.01</u> 18	<u>0.02</u> 125	<u>0.02</u> 86%	<u>0.02</u> 14%
Irrigation	<u>0.10*</u> 322	<u>0.07</u> 153	<u>0.06</u> 475	<u>0.06</u> 68%	<u>0.09</u> 32%
Sprinklers	71	16	87	82%	18%
Total Average Day Water Usage	<u>6.94*</u> 8,568	<u>7.72</u> 4,551	<u>6.49</u> 13,119	<u>6.59</u> 65%	<u>6.22</u> 35%
Corresponding per capita water usage	<u>149 gpd</u>	<u>156 gpd</u>	<u>127 gpd</u>	<u>123 gpd</u>	<u>112 gpd</u>

Source: City of Leesburg Environmental Services Department—~~2002~~ 2003.

* Based on use projected in the City's 2001 (facility allocation consolidation) CUP Application

Table V- 3: City of Leesburg Existing Demand on Public Water Wells – 2003 ~~2001~~

Well Identification and Size	Well Location	Current Demand on Wells	Maximum Well Pumping Capacity
Well #6 – 12"	City of Leesburg	<u>0.339</u> 0.403 MGD	<u>910</u> 913 GPM
Well #7 – 12"	City of Leesburg	<u>0.382</u> 0.403 MGD	1,070 GPM
Well #8 – 12"	City of Leesburg	<u>0.206</u> 0.403 MGD	<u>550</u> 544 GPM
Well #9 – 12"	City of Leesburg	<u>0.000</u> 0.403 MGD	<u>910</u> 913 GPM
Well #10 – 16"	City of Leesburg	<u>0.478</u> 0.403 MGD	1,590 GPM
Well #11 – 16"	City of Leesburg	<u>0.572</u> 0.403 MGD	1,470 GPM
Well #14 – 8"	City of Leesburg	<u>0.507</u> 0.403 MGD	<u>1,400</u> 1,405 GPM
Well #15 – <u>20 24"</u>	City of Leesburg	<u>0.739</u> 0.403 MGD	2,100 GPM
Well #16 – <u>20 24"</u>	City of Leesburg	<u>0.644</u> 0.403 MGD	2,100 GPM
Well #1 – 14"	Lake Square Mall	<u>0.926</u> 0.53 MGD	2,160 GPM
Well #1 – 12"	Airport Plant	<u>0.196</u> 0.53 MGD	<u>1,500</u> 1,000 GPM
Well #1 – 12"	Highland Lakes	<u>0.300</u> 0.275 MGD	<u>1,150</u> 650 GPM
Well #2 – 12"	Highland Lakes	<u>0.193</u> 0.275 MGD	<u>1,150</u> 650 GPM
Well #1 – 12"	Royal Highlands	<u>0.327</u> 0.29 MGD	700 GPM
Well #2 – 12"	Royal Highlands	<u>0.317</u> 0.29 MGD	700 GPM

Source: City of Leesburg Environmental Services Department – 2003 ~~EN50 Data~~ ~~2002~~.Table V- 4: City of Leesburg Existing Potable Water Storage Facilities – 2003 ~~2001~~

Storage Facility	Location	Maximum Capacity
Above Ground Storage #1	City of Leesburg College Street	0.50 MG
Above Ground Storage #2	City of Leesburg Newell Hill	0.20 MG
Above Ground Storage #3	Lake Square Mall	0.15 MG
Above Ground Storage #4	Highland Lakes	0.20 MG
Ground Storage #1	City of Leesburg	1.50 MG
Ground Storage #2	City of Leesburg	1.50 MG
Ground Storage #3	Royal Highlands	0.50 MG

Hydrostatic Tank #1	Airport Plant	0.01 MG
Hydrostatic Tank #2	Airport Plant	0.01 MG

Source: City of Leesburg Environmental Services Department – ~~2003~~ **2002**.

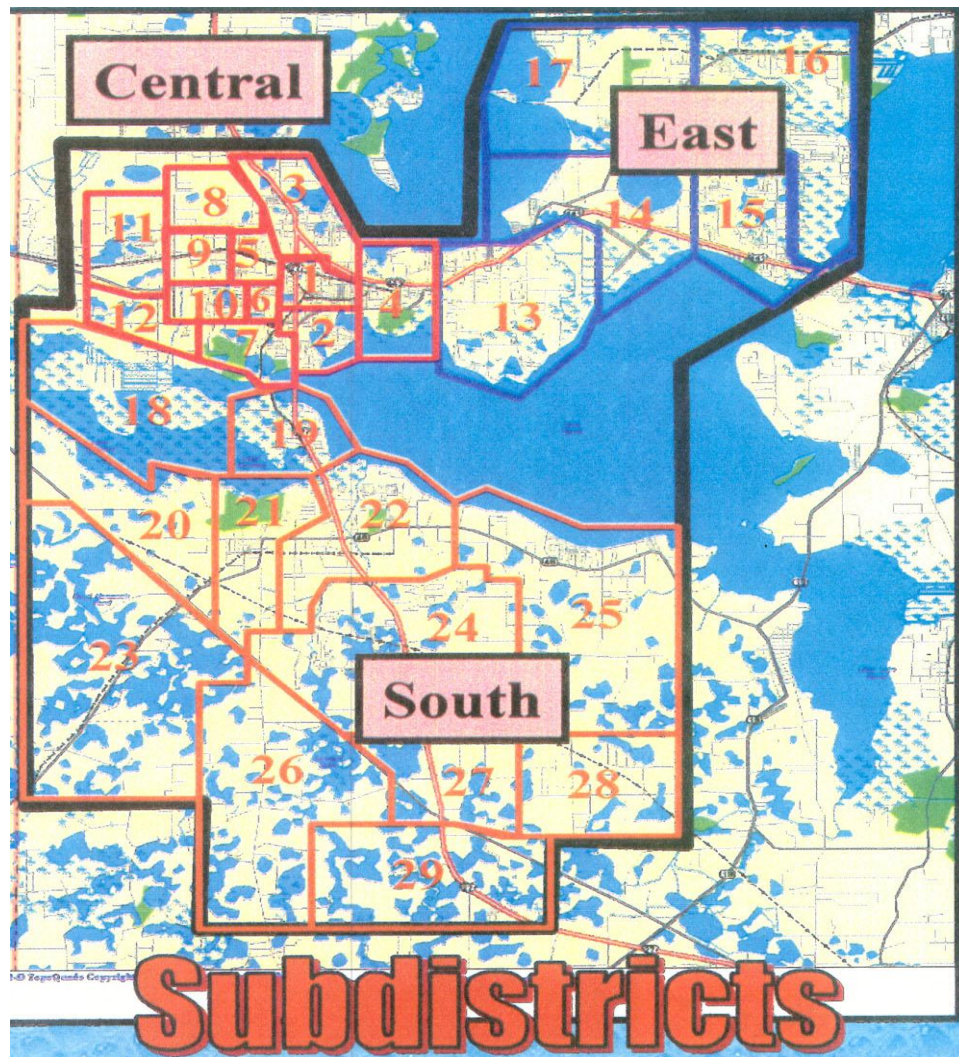
Table V- 5: City of Leesburg Potable Water Demand Projections

Area *	ERC's (Residential Accounts)		2015 2040 ADD	2025 2020 ADD
	2015 2040	2025 2020		
Central (Main WTP)	8,558 13,687	9,985 14,857	5.71 4,035,045	6.76 4,449,949
East	2,537 9,465	3,002 10,752	1.69 1,999,875	2.03 2,450,392
South (HL, RH & Pruitt WTPs)	8,357 19,025	10,909 31,027	5.58 3,526,627	7.37 7,069,887
Totals	19,451 42,177	23,896 56,635	13.27** 9,553,546	16.49** 13,970,228

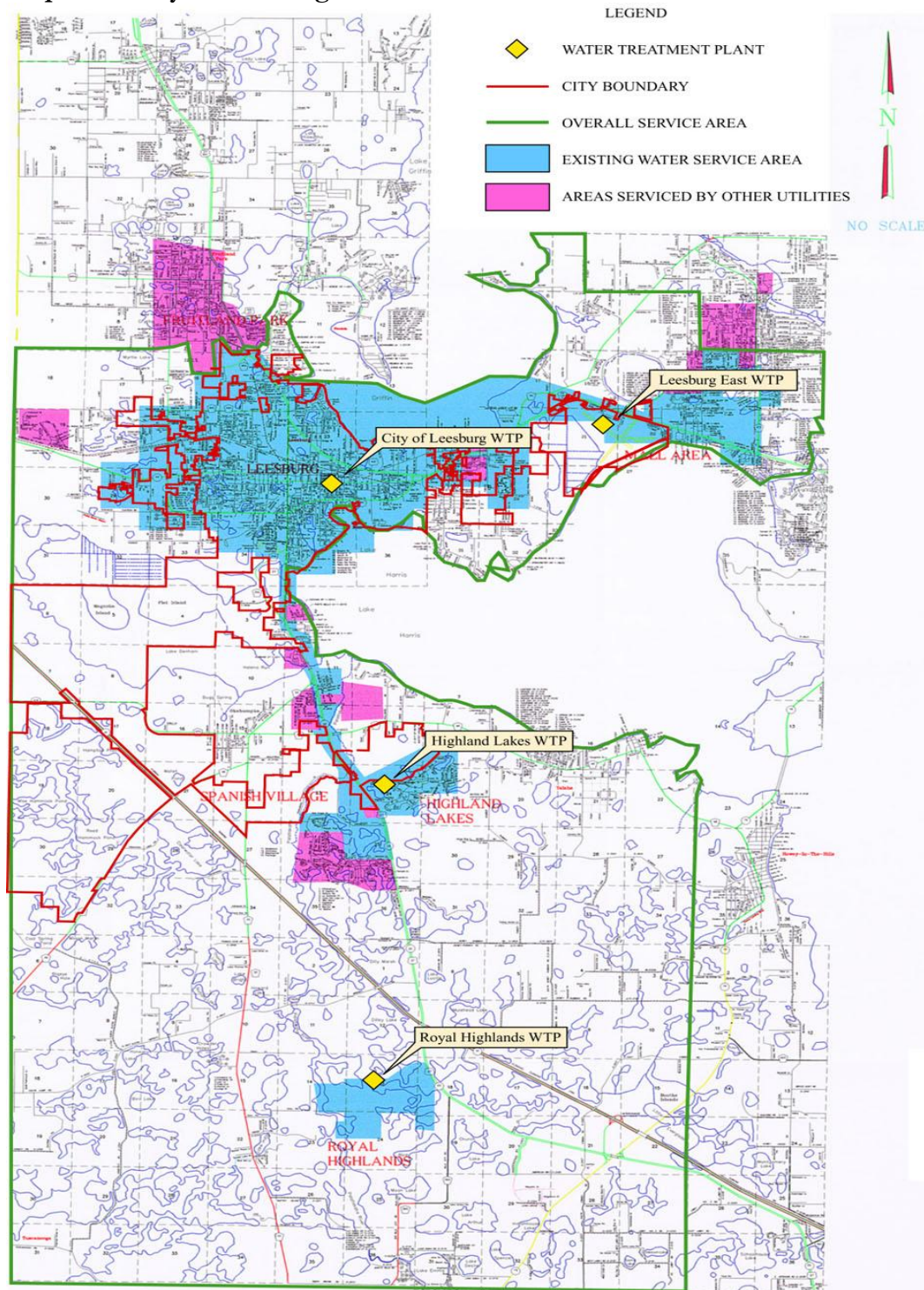
* Study broke service area into three sub-districts. Sub-districts indicated in map below.

**** Totals Include the estimated Legacy Irrigation (Reuse Back-up) Well withdrawals of 0.29MGD and 0.33 MGD, respectively for years 2015 and 2025.**

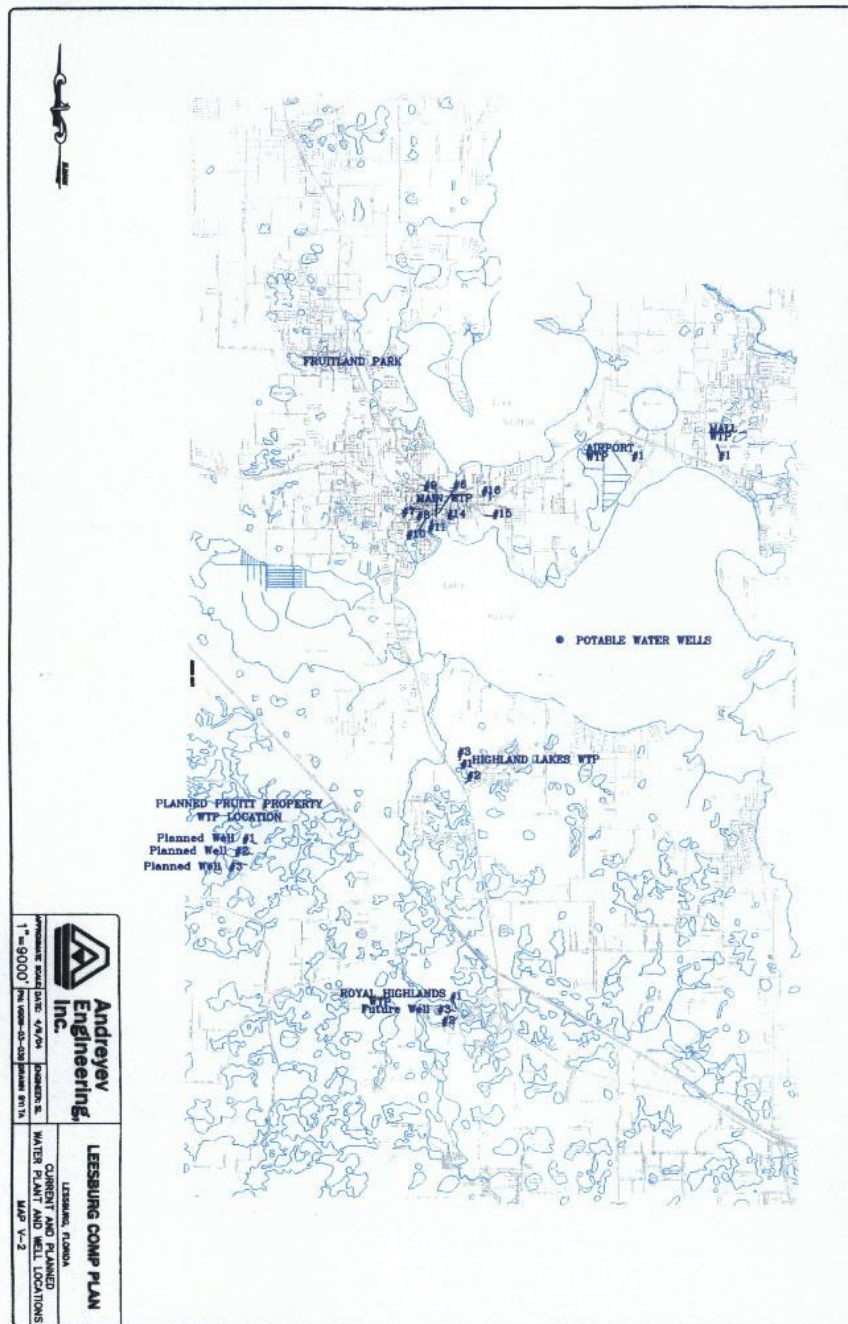
Source: Leesburg's 2004 CUP Application Submittal Preparation Materials ~~Water Demand Study 2020~~



Map V- 1: City of Leesburg Potable Water Service Area



Map V- 2: Water Treatment Plant and Well Locations (~~North Leesburg Area~~)



GOALS, OBJECTIVES AND POLICIES

GOAL 1: To plan for and assure an adequate supply of excellent quality potable water to meet the needs of all city residents and non-residential establishments within the City of Leesburg and within the City's service area in the 20-year planning horizon, in accordance with the five-year Capital Improvements Program and consistent with the City's Consumptive Use Permit, 10-Year Water Facilities Work Plan and St. Johns River Water Management District's (SJRWMD's) regional water supply plans.

Objective 1.1: **Potable Water Facilities.** Based upon adopted level of service standards, the City shall annually adopt programs and activities to correct existing deficiencies in the central potable water system.

Policy 1.1.1: The City shall continue to maximize the use of the five potable water treatment facilities, and ultimately strive to incorporate all private systems into the unified city water system.

Policy 1.1.2: The City's Level of Service for potable water supply shall be 150 gallons per person per day.

Policy 1.1.3: When evaluating well capacity, the City shall perform pump tests and use hydrogeological field information in the calculation of the system's ability to meet the level of service standard.

Policy 1.1.4: When evaluating system pump capacity, the City shall use a peak factor of 1.1 GPM per ERC in the calculation of the system's ability to meet the level of service standard.

Policy 1.1.5: The City's central system parameters shall be based on the following:

- Well field capacity shall be rated at the average daily demand and assuming the largest well being out of service,
- High service pump capacity shall at least be equal to the maximum daily peak factor demand and assuming the largest high service pump being out of service, or have the ability to replace a failed high service pump within 24 hours, and
- The distribution system shall be designed for a minimum of thirty-eight (38) pounds per square inch (psi) delivery pressure during normal demand.

- Policy 1.1.6:** The City will maintain its potable water treatment facilities in optimum condition by the implementation of a preventive maintenance program.
- Policy 1.1.7:** The City shall maintain a Water Facilities Work Plan consistent with the City's Consumptive Use Permit and the St. Johns River Water Management District's (SJRWMD's) regional water supply plans for at least a ten- (10) year planning period. The Water Facilities Work Plan (Attachment A) shall be reviewed annually and shall be updated within 18 months of an update to the SJRWMD Water Supply Plan that affects the City or sooner if necessary.
- Policy 1.1.8:** The City shall implement the five-year Capital Improvement Schedule for potable water facilities adopted in the Capital Improvements Element and the five-year Capital Improvements Plan updated and adopted annually.
- Policy 1.1.9:** The City shall review water fee methodology and user rates annually during the budget process to insure adequate funding for treatment, storage and distribution facilities.
- Policy 1.1.10:** The City shall develop a system of review of individual customer water meters to ensure proper readings of those meters.
- Policy 1.1.11:** The City shall institute a replacement or "change out" schedule for meters in the field to ensure replacement at least every ten (10) years.
- Policy 1.1.12:** All improvements and/or additions to potable water facilities to correct deficiencies shall be compatible and adequate to meet the adopted level of service standards. These improvements and/or additions to Potable Water facilities shall comply, at a minimum, with standards recognized and approved by the Florida Department of Environmental Protection, specifically including the American Society of Civil Engineers and the American Water Works Association.

Objective 1.2: Future Potable Water Facilities. Based upon population projections, the City shall ensure the supply and treatment of safe potable water through the 20-year planning horizon to meet the adopted level of service standards to existing and future development in accordance with the five-year Capital Improvements Program and consistent with the St Johns River Water Management District's (SJRWMD's) regional water supply plans, the City's 10-Year Water Facilities Work Plan, Consumptive Use Permit and Future Land Use Element.

- Policy 1.2.1:** Based upon the adopted level of service the City shall plan for replacement, expansion and extension of potable water facilities to meet future demands concurrent with new development.
- Policy 1.2.2:** The City shall plan for adequate future treatment facilities, which at a minimum will meet all Federal and State drinking water criteria.
- Policy 1.2.3:** The City shall implement the capital improvement schedule for potable water facilities adopted in the Capital Improvements Element and the annual Capital Improvements Plan.
- Policy 1.2.4:** The City shall review the Capital Improvement Schedule annually and adopt a City Budget that prioritizes needed potable water improvements to meet the demands of future growth and approved developments.
- Policy 1.2.5:** The city will ensure that all facilities identified as being needed in the first five years of 10-year work plan planning period be adopted as a revision to the city's 5-year Capital Improvements Plan.
- Policy 1.2.6:** The City shall prepare a 10-year Water Supply Facilities Work Plan in coordination with local governments that identifies potable water supply, infrastructure and facility projects, identify potable water sources, and estimate project costs for a 10 year planning period.
- Policy 1.2.7:** The City shall ensure that the 10-year Water Supply Facilities Work Plan is prepared in accordance with the SJRWMD regional water supply plans and Consumptive Use Permit.
- Policy 1.2.8:** The City shall identify all additional potable water supply sources, infrastructure and facilities (and associated projects/costs) to provide adequate services to future development consistent with the Future Land Use Element and to meet water supply demands for a 10-year planning period in the prepared 10-year Water Supply Facilities Work Plan.
- Policy 1.2.9:** The City shall ensure that the 10-year Water Supply Facilities Work Plan includes a description of existing water supply facilities and descriptions/locations of projects.
- Policy 1.2.10:** The City shall ensure that the selection of water supply projects in the 10-year Water Supply Facilities Work Plan are evaluated based on: imparting a minimal impact to spring and wetland flows/levels; feasibility of cost and operability; and the availability

of the water supply resource considering allocations provided to other neighboring utilities/governments.

Policy 1.2.11: The City shall ensure that the 10-year Water Supply Facilities Work Plan includes service area and water supply demand projections for a 10-year planning period.

Policy 1.2.12: The City shall ensure that the 10-year Water Supply Facilities Work Plan includes all relevant design projections to meet stated water supply needs, including anticipated facility permitting and construction dates, estimated facility construction costs, and fund sources.

Policy 1.2.13: The city shall make appropriate changes to the city's Comprehensive Plan's Conservation Element, Intergovernmental Coordination Element, Capital Improvements Element, Future Land Use Element, Potable Water Element, and appropriate sections of utility elements (i.e., the Sanitary Sewer, Stormwater Management elements) as necessary to support implementation of the 10-year Water Supply Facilities Work Plan goals, objectives and projects.

Objective 1.3: **Potable Water Service Area.** The City shall strive to provide potable water service to all development within its service areas and shall discourage leapfrog development and urban sprawl.

Policy 1.3.1: The City shall be the provider of potable water to residents and non-residential establishments within the City's service area.

Policy 1.3.2: The City shall not approve private wells for potable water use when City potable water facilities are available. When not available, the City may authorize the use of private wells for potable and non-potable purposes by the customer. Any and all alternative uses of private wells must be approved by the City of Leesburg Environmental Services Department.

Policy 1.3.3: At such time as the City's potable water facilities become available to a customer residing in the City limits, said customer:

- Must connect to the City water system for potable and irrigation water purposes and ensure that all connections to City water meters have a City approved backflow prevention device properly installed (within the first 12-inches of the customer side of all City water

meters) and maintained/tested by the property owner upon installation and yearly thereafter;

- May use existing active wells for agricultural and livestock support purposes, provided that a City approved backflow prevention device is properly installed (within the first 12-inches of the customer side of all City water meters) and maintained/tested by the property owner upon installation and yearly thereafter; and
- Must properly abandon all inactive wells: an inactive well is defined as any well that has not been in use for six (6) or more months.

Policy 1.3.4: Potable water facilities shall be considered “available” when they exist within 200 feet of a property. Costs associated with connection to the City’s facilities shall be the responsibility of the owner and not the City of Leesburg.

Policy 1.3.5: The City shall discourage urban sprawl through the following activities:

- Require that all new developments within the City’s service area connect to the City’s existing centralized water supply/treatment facilities and utilize stormwater and reclaimed water for all irrigation needs, if available;
- The City shall only provide service to those areas included in the City’s delineated Service area;
- The City shall not allow new development in the Service area to utilize individual private wells for water service; and,
- When reviewing applications for development orders within the City limits, the City shall consider impact on the environment, including the ability to be served by the City’s existing water facilities.

Objective 1.4: Potable Water Conservation. The City shall maintain initiatives to conserve potable water resources, which ensure that existing level of service standards for potable water do not fluctuate higher than 37.5 gallons per person per day.

Policy 1.4.1: The City shall maintain a progressive water rate structure to ensure conservation of potable water.

- Policy 1.4.2:** The City shall maintain the reclaimed wastewater effluent program whereby wastewater is treated to standards consistent with Florida Department of Environmental Protection (FDEP) requirements for “unrestricted public access” irrigation of private and public areas, so that potable water is not used for irrigation in areas where reclaimed water is available.
- Policy 1.4.3:** By 2004, the City shall develop and maintain a reclaimed water master plan for use in planning expansions to the existing reclaimed water system.
- Policy 1.4.4:** The City shall implement the five-year capital improvement schedule for reclaimed water facilities adopted in the Capital Improvements Element, as well as the annual Capital Improvement Plan.
- Policy 1.4.5:** The SJRWMD has the exclusive authority to regulate consumptive uses of water under Chapter 373, F.S. The City shall have the authority to ensure for the efficient operation of the reclaimed water system or for the health or safety of the general public or the customer, regarding the following matters:
- The times of day or night during which the reclaimed water may be used by customers.
 - The maximum rate of use of the reclaimed water.
 - The right to inspect reclaimed water devices, facilities, and terminate service to reclaimed water system found to be in violation of any city ordinance, regulation or procedure.
 - The right to impose the requirement that upon being connected to the city's reclaimed water system, any existing wells on the subject property shall not continue to be used for irrigation and shall be disconnected from the irrigation system (unless otherwise approved by the cognizant permitting agency and the city manager).
 - The right to impose the mandatory payment of fees for the installation and usage of reclaimed water systems. Once service is connected, the user shall pay a minimum monthly charge set by resolution of the city commission.

- The right to temporarily discontinue service to any portion of, or the entire, reclaimed water system as deemed necessary by the city.

- Policy 1.4.6 ~~5~~: The City shall require that all new developments which contain or abut existing or planned future extensions of the City's reclaimed water distribution system connect to the reclaimed water system for residential, commercial and common area irrigation uses, at the developer's expense, when available.
- Policy 1.4.7 ~~6~~: The City shall require the installation of EPA Water Sense certified plumbing devices including ultra-low flow toilets, shower heads and faucets for new construction and within new developments.
- Policy 1.4.8 ~~7~~: The City shall adhere to St. Johns River Water Management District emergency water shortage restrictions when mandated by the District.
- Policy 1.4.9 ~~8~~: The City shall conduct annual water audits on per capita potable water consumption to determine if consumption is being reduced **and adjust the city's water use rate structure accordingly to maintain per capita consumption at or below previous levels.**

GOAL 2: Provide adequate delivery and distribution of potable water to meet fire protection demand within the City of Leesburg and the City's service area.

Objective 2.1: **Fire Protection.** The City shall monitor, evaluate, repair and replace, as needed, the existing water delivery and distribution system **facilities identified in the 10-year Water Supply Facilities Work Plan** to ensure the system can deliver, by 2005, needed gallon per minute flows to meet fire protection demands.

- Policy 2.1.1:** The City shall maintain an active water system and fire hydrant mapping and numbering program.
- Policy 2.1.2:** The City of Leesburg Environmental Services Department shall continue to conduct fire flow testing of hydrants to endure adequate system capacity.
- Policy 2.1.3:** The City shall extend water distribution mains to areas within the City's service area and provide adequate fire protection service to residents and non-residential establishments located within the service area provided the residents/developers participate in the costs.

- Policy 2.1.4:** Fire flow levels of service shall be based upon delivery of 500 GPM for residential and 1000 GPM for multi-family and commercial developments with a required residual pressure of twenty (20) psi. developments with a required residual pressure of twenty (20) psi.